



The Effect of Penetrant Enhancer Combination towards the Diffusion Rate of Snakehead Fish (*Ophiocephalus striatus*) Cream in Vitro and Vivo

Robert Tungadi^{1*}, Ani M Hasan²

¹Pharmacy Department, Faculty of Sport and Health, State University of Gorontalo, Indonesia

²Biology Department, Faculty of Mathematics and Natural Sciences, State University of Gorontalo, Indonesia

Abstract : The aim of this research was to determine amount of albumin in snakehead fish cream which can be transported by stratum corneum using penetrant enhancer combination. The snakehead fish powder, containing albumin, was formulated in cream dosage form which consist of 6 formulas. They consisted of penetration enhancer combination in different concentration such as propylene glycol and oleic acid i.e. (F0) : no penetrant enhancer, (F1) : 2% : 5%, (F2) : 4% : 3%, (F3) : 6% : 1%, (F4) : 0% : 7%, (F5) : 7% : 0%. The all of formulas were tested by diffusion membrane cell in vitro using rat skin. After that, the best formulas which were taken to be tested in vivo using rabbits. It was grouped based on the best formulas and positive control (Madecassol® ointment) which each rabbit was wounded on dorsal by scalpel having wound diameter 2 cm then observed for 12 days by measurement and taking picture of wound diameter compared to positive control. The research result showed that all formulas after testing of diffusion cell showed only 1 formula giving the best result i.e. F5 propylene glycol : oleic acid (7% : 0%). The amount of albumin which can be transported into stratum corneum for F5 was 49.76%. Otherwise, the other formulas were only average 0.5% - 7%. It means that snakehead fish cream containing penetrant enhancer without combination giving the best result to penetrate stratum corneum. It was proven by pre-clinic test using rabbits showing the wound experienced healing process acceleration which marked reduction of wound diameter on the third day.

Keywords : snakehead fish, cream, albumin, wound healing.